

Refine Search

Search Results -

Terms	Documents
L7 and (DsRED2)	1

Database:

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 US Patents Full-Text Database
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Search:

L8

Search History

DATE: Monday, September 20, 2004 [Printable Copy](#) [Create Case](#)

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result set

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<u>L8</u>	L7 and (DsRED2)	1	<u>L8</u>
<u>L7</u>	red shifted and fluorescent protein	351803	<u>L7</u>
<u>L6</u>	(K68M)	0	<u>L6</u>
<u>L5</u>	(M129V)	0	<u>L5</u>
<u>L4</u>	(N66M)	0	<u>L4</u>
<u>L3</u>	(ds/drFP616)	0	<u>L3</u>
<u>L2</u>	(drFP583)	2	<u>L2</u>
<u>L1</u>	6342379.pn.	1	<u>L1</u>

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Search Results - Record(s) 1 through 2 of 2 returned.

☐ 1. Document ID: US 6689391 B2

L2: Entry 1 of 2

File: USPT

Feb 10, 2004

US-PAT-NO: 6689391

DOCUMENT-IDENTIFIER: US 6689391 B2

TITLE: Natural non-polar fluorescent dye from a non-bioluminescent marine invertebrate, compositions containing the said dye and its uses

DATE-ISSUED: February 10, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Goswami; Usha	Goa			IN
Ganguly; Anutosh	Goa			IN

US-CL-CURRENT: [424/559](#); [424/520](#), [424/547](#), [435/41](#), [435/810](#), [435/968](#), [8/648](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstract	Revised	Claims	KMC	Draw De
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☐ 2. Document ID: US 6342379 B1

L2: Entry 2 of 2

File: USPT

Jan 29, 2002

US-PAT-NO: 6342379

DOCUMENT-IDENTIFIER: US 6342379 B1

TITLE: Detection of transmembrane potentials by optical methods

DATE-ISSUED: January 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tsien; Roger Y.	La Jolla	CA		
Gonzalez, III; Jesus E.	San Diego	CA		

US-CL-CURRENT: [435/173.4](#); [435/29](#), [436/172](#), [436/519](#), [436/546](#), [436/63](#), [436/805](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstract	Revised	Claims	KMC	Draw De
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Terms	Documents
(drFP583)	2

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☐ 1. Document ID: US 6596499 B2

L8: Entry 1 of 1

File: USPT

Jul 22, 2003

US-PAT-NO: 6596499

DOCUMENT-IDENTIFIER: US 6596499 B2

TITLE: Membrane molecule indicator compositions and methods

DATE-ISSUED: July 22, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Jalink; Kees	Heemstede			NL

US-CL-CURRENT: 435/7.1; 435/252.3, 435/320.1, 435/325, 435/7.8, 435/7.9, 436/172, 436/86, 536/23.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstract	Abstract	Claims	KMC	Drawings
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Terms	Documents
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NEWS	17	AUG 27 BIOTECHABS/BIOTECHDS: Two new display fields added for legal status data from INPADOC
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FILE 'USPATFULL' ENTERED AT 14:09:06 ON 20 SEP 2004
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=> s anthozoa and Cnidarian
L1 76 ANTHOZOA AND CNIDARIAN

=> s anthozoa and discosoma
L2 26 ANTHOZOA AND DISCOSOMA

=> s l1 and l2
L3 4 L1 AND L2

=> s discosoma and cnidarian
L4 4 DISCOSOMA AND CNIDARIAN

=> d l4 ti abs ibib tot

L4 ANSWER 1 OF 4 USPATFULL on STN

TI Fluorescent proteins from aquatic species

AB Provided are four new fluorescent proteins. The proteins were derived from two wild-type fluorescent proteins: a red fluorescent protein (RFP) that was isolated from Actinodiscus or *Discosoma* sp. 1 and a green fluorescent protein (GFP) isolated from *Montastraea cavernosa*. Two mutant forms were generated from each wild-type protein. Each of the mutated forms has a higher fluorescence intensity than the respective wild-type form. The mutant forms of the fluorescent proteins allow for more sensitive detection of the fluorescence emitted by the proteins. Additionally, one of the mutant proteins is more resistant to photobleaching than its wild-type protein. The invention also encompasses isolated nucleic acids encoding the mutant forms of the wild-type RFP and GFP.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER: 2004:144561 USPATFULL

TITLE: Fluorescent proteins from aquatic species

INVENTOR(S): Gibbs, Patrick D.L., Miami, FL, UNITED STATES

Carter, Robert W., Miami, FL, UNITED STATES

Schmale, Michael C., Miami, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004110225	A1	20040610
APPLICATION INFO.:	US 2002-314936	A1	20021209 (10)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	APPLICATION		
LEGAL REPRESENTATIVE:	BOYLE, FREDRICKSON, NEWHOLM, STEIN & GRATZ, S.C., 250 Plaza, Suite 1030, 250 East Wisconsin Avenue,		

Milwaukee, WI, 53202
NUMBER OF CLAIMS: 46
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 12 Drawing Page(s)
LINE COUNT: 1250
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 2 OF 4 USPATFULL on STN
TI Kindling fluorescent proteins and methods for their use
AB Kindling fluorescent protein compositions and nucleic acids encoding the same, as well as methods for using the same, are provided. The kindling fluorescent proteins are characterized in that they become brightly fluorescent proteins, from an initial non-fluorescent or low fluorescent state, upon exposure to a kindling stimulus, which fluorescent state may be reversible or irreversible. The subject protein/nucleic acid compositions find use in labeling protocols, e.g., in labeling proteins, organelles, cells and organisms, etc., in a variety of different types of applications. Also provided are systems and kits for use in practicing such applications.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER: 2003:134795 USPATFULL
TITLE: Kindling fluorescent proteins and methods for their use
INVENTOR(S): Lukyanov, Sergey A., Moscow, RUSSIAN FEDERATION
Lukyanov, Konstantin, Moscow, RUSSIAN FEDERATION
Chudakov, Dmitry, Moscow, RUSSIAN FEDERATION

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003092884	A1	20030515
APPLICATION INFO.:	US 2002-155809	A1	20020524 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-293752P	20010525 (60)
	US 2001-329176P	20011011 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	BOZICEVIC, FIELD & FRANCIS LLP, 200 MIDDLEFIELD RD, SUITE 200, MENLO PARK, CA, 94025	
NUMBER OF CLAIMS:	43	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	10 Drawing Page(s)	
LINE COUNT:	3222	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 3 OF 4 USPATFULL on STN
TI Non aggregating fluorescent proteins and methods for using the same
AB Nucleic acid compositions encoding non-aggregating chromo/fluoroproteins and mutants thereof, as well as the proteins encoded by the same, are provided. The proteins of interest are polypeptides that are non-aggregating colored and/or fluorescent proteins, where the the non-aggregating feature arises from the modulation of residues in the N-terminus of the protein and the chromo and/or fluorescent feature arises from the interaction of two or more residues of the protein. Also provided are fragments of the subject nucleic acids and the peptides encoded thereby, as well as antibodies to the subject proteins and transgenic cells and organisms. The subject protein and nucleic acid compositions find use in a variety of different applications. Finally, kits for use in such applications, e.g., that include the subject nucleic acid compositions, are provided.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER: 2003:30340 USPATFULL

TITLE: Non aggregating fluorescent proteins and methods for using the same

INVENTOR(S): Lukyanov, Sergey, Moscow, RUSSIAN FEDERATION
 Lukyanov, Konstantin, Moscow, RUSSIAN FEDERATION
 Yanushevich, Yuriy, Moscow, RUSSIAN FEDERATION
 Savitsky, Alexandr, Moscow, RUSSIAN FEDERATION
 Fradkov, Arcady, Moscow, RUSSIAN FEDERATION

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003022287	A1	20030130
APPLICATION INFO.:	US 2002-81864	A1	20020220 (10)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 2001-6922, filed on 4 Dec 2001, PENDING		

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-270983P	20010221 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	BOZICEVIC, FIELD & FRANCIS LLP, 200 MIDDLEFIELD RD, SUITE 200, MENLO PARK, CA, 94025	
NUMBER OF CLAIMS:	20	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	15 Drawing Page(s)	
LINE COUNT:	2207	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		

L4 ANSWER 4 OF 4 USPATFULL on STN

TI Novel chromophores/fluorophores and methods for using the same

AB Nucleic acid compositions encoding novel chromo/fluoroproteins and mutants thereof, as well as the proteins encoded by the same, are provided. The subject proteins of interest are proteins that are colored and/or fluorescent, where this feature arises from the interaction of two or more residues of the protein. The subject proteins are further characterized in that they are either obtained from non-bioluminescent **Cnidarian**, e.g., Anthozoan, species or are obtained from non-Pennatulacean (sea pen) species. Specific proteins of interest include proteins obtained from the following specific Anthozoan species: *Anemonia majano* (NFP-1), *Clavularia* sp. (NFP-2), *Zoanthus* sp. (NFP-3 & NFP-4), *Discosoma striata* (NFP-5), *Discosoma* sp. "red" (NFP-6), *Anemonia sulcata* (NFP-7), *Discosoma* sp "green" (NFP-8), and *Discosoma* sp. "magenta" (NFP-9). Also of interest are proteins that are substantially similar to, or mutants of, the above specific proteins. Also provided are fragments of the nucleic acids and the peptides encoded thereby, as well as antibodies to the subject proteins and transgenic cells and organisms. The subject protein and nucleic acid compositions find use in a variety of different applications. Finally, kits for use in such applications, e.g., that include the subject nucleic acid compositions, are provided.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER: 2002:343950 USPATFULL

TITLE: Novel chromophores/fluorophores and methods for using the same

INVENTOR(S): Lukyanov, Sergey A., Moscow, RUSSIAN FEDERATION
 Fradkov, Arcady F., Moscow, RUSSIAN FEDERATION
 Labas, Yulii A., Moscow, RUSSIAN FEDERATION
 Matz, Mikhail V., Palm Cost, RUSSIAN FEDERATION
 Terskikh, Alexey, Palo Alto, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002197676	A1	20021226

APPLICATION INFO.: US 2001-6922 A1 20011204 (10)
RELATED APPLN. INFO.: Continuation-in-part of Ser. No. WO 2000-US28477, filed
on 13 Oct 2000, UNKNOWN Continuation-in-part of Ser.
No. US 1999-418529, filed on 14 Oct 1999, PENDING
Continuation-in-part of Ser. No. US 1999-418917, filed
on 15 Oct 1999, ABANDONED Continuation-in-part of Ser.
No. US 1999-418922, filed on 15 Oct 1999, ABANDONED
Continuation-in-part of Ser. No. US 1999-444338, filed
on 19 Nov 1999, ABANDONED Continuation-in-part of Ser.
No. US 1999-444341, filed on 19 Nov 1999, ABANDONED
Continuation-in-part of Ser. No. US 1999-457556, filed
on 9 Dec 1999, ABANDONED Continuation-in-part of Ser.
No. US 1999-458477, filed on 9 Dec 1999, ABANDONED
Continuation-in-part of Ser. No. US 1999-458144, filed
on 9 Dec 1999, ABANDONED Continuation-in-part of Ser.
No. US 1999-457898, filed on 9 Dec 1999, ABANDONED

	NUMBER	DATE
PRIORITY INFORMATION:	WO 1999-US29405	19991210
	US 2000-211627P	20000614 (60)
	US 2000-211687P	20000614 (60)
	US 2000-211609P	20000614 (60)
	US 2000-211626P	20000614 (60)
	US 2000-211880P	20000614 (60)
	US 2000-211607P	20000614 (60)
	US 2000-211766P	20000614 (60)
	US 2000-211888P	20000614 (60)
	US 2000-212070P	20000614 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: BOZICEVIC, FIELD & FRANCIS LLP, 200 MIDDLEFIELD RD,
SUITE 200, MENLO PARK, CA, 94025
NUMBER OF CLAIMS: 31
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 19 Drawing Page(s)
LINE COUNT: 2795
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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NEWS EXPRESS		JULY 30 CURRENT WINDOWS VERSION IS V7.01, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 11 AUGUST 2004
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MISSING OPERATOR 'WITH (NON-BIOLUM'
The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s discosoma and (non-bioluminescent)
L1 414 DISCOSOMA AND (NON-BIOLUMINESCENT)

=> s l1 and green
L2 398 L1 AND GREEN

=> d l1 ti abs ibib 1-10

L1 ANSWER 1 OF 414 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
TI Reef-coral proteins as visual, non-destructive reporters for plant transformation.
AB Recently, five novel fluorescent proteins have been isolated from **non-bioluminescent** species of reef-coral organisms and have been made available through ClonTech. They are AmCyan, AsRed, DsRed, ZsGreen and ZsYellow. These proteins are valuable as reporters for transformation because they do not require a substrate or external co-factor to emit fluorescence and can be tested in vivo without destruction of the tissue under study. We have evaluated them in a large range of plants, both monocots and dicots, and our results indicate that they are valuable reporting tools for transformation in a wide variety of crops. We report here their successful expression in wheat, maize, barley, rice, banana, onion, soybean, cotton, tobacco, potato and tomato. Transient expression could be observed as early as 24 h after DNA delivery in some cases, allowing for very clear visualization of individually

transformed cells. Stable transgenic events were generated, using mannose, kanamycin or hygromycin selection. Transgenic plants were phenotypically normal, showing a wide range of fluorescence levels, and were fertile. Expression of AmCyan, ZsGreen and AsRed was visible in maize T1 seeds, allowing visual segregation to more than 99% accuracy. The excitation and emission wavelengths of some of these proteins are significantly different; the difference is enough for the simultaneous visualization of cells transformed with more than one of the fluorescent proteins. These proteins will become useful tools for transformation optimization and other studies. The wide variety of plants successfully tested demonstrates that these proteins will potentially find broad use in plant biology.

ACCESSION NUMBER: 2004:77391 BIOSIS
DOCUMENT NUMBER: PREV200400078632
TITLE: Reef-coral proteins as visual, non-destructive reporters for plant transformation.
AUTHOR(S): Wenck, A. [Reprint Author]; Pugieux, C.; Turner, M.; Dunn, M.; Stacy, C.; Tiozzo, A.; Dunder, E.; van Grinsven, E.; Khan, R.; Sigareva, M.; Wang, W. C.; Reed, J.; Drayton, P.; Oliver, D.; Trafford, H.; Legris, G.; Rushton, H.; Tayab, S.; Launis, K.; Chang, Y.-F.; Chen, D.-F.; Melchers, L.
CORPORATE SOURCE: BASF Plant Science, 26 Davis Dr, Research Triangle Park, NC, 27709, USA
wencka@basf.com
SOURCE: Plant Cell Reports, (November 2003) Vol. 22, No. 4, pp. 244-251. print.
CODEN: PCRPD8. ISSN: 0721-7714.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 4 Feb 2004
Last Updated on STN: 4 Feb 2004

L1 ANSWER 2 OF 414 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
TI Novel nucleic acid encoding a rapidly maturing chromo- or fluorescent mutant of a Cnidarian chromo- or fluorescent protein or its mutant, useful for applications involving chromo- or fluorescent proteins.
AN 2003-569236 [53] WPIDS
AB WO2003054158 A UPAB: 20030820
NOVELTY - A nucleic acid (I) that encodes a rapidly maturing chromo or fluorescent mutant of a Cnidarian chromo- or fluorescent protein or its mutant, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

- (1) a fragment (II) of (I);
- (2) a construct (III) comprising a vector and (I);
- (3) an expression cassette (IV) comprising, a transcriptional initiation region functional in an expression host, (I), or (II), and a transcriptional termination region functional in the expression host;
- (4) a cell (V), or its progeny, comprising (IV) as part of an extrachromosomal element or integrated into the genome of a host cell as a result of introduction of the expression cassette into the host cell;
- (5) a protein (VI) or its fragment encoded by (I);
- (6) an antibody (VII) binding specifically to (VI);
- (7) a transgenic cell or its progeny, or a transgenic organism comprising a transgene that is (I) or (II); and
- (8) a kit comprising (I) or (II).

USE - (I) is useful in applications involving nucleic acid encoding a chromo- or fluorescent protein. (V) is useful for producing a chromo and/or fluorescent protein which involves growing the cell, whereby the protein is expressed, and isolating the protein substantially free of other proteins. (VI) is useful in applications involving chromo- or fluorescent protein (claimed).

(I) is useful as PCR primers, hybridization probes, etc. The expression cassettes are useful for synthesizing (VI). The chromoproteins are useful as coloring agents which are capable of imparting color or

pigment to a particular composition of matter e.g. food compositions, pharmaceuticals, cosmetics, living organisms, e.g., animals and plants. The chromoproteins may also find use as labels in analyte detection assays, e.g. assays for biological analytes of interest and as selectable markers in recombinant DNA applications, e.g. the production of transgenic cells and organisms. The fluorescent proteins find use in a variety of different applications, e.g. in fluorescence resonance energy transfer (FRET) applications, as biosensors in prokaryotic and eukaryotic cells, in applications involving the automated screening of arrays of cells expressing fluorescent reporting groups by using microscopic imaging and electronic analysis, as second messenger detectors, and in fluorescence activated cell sorting applications and as in vivo marker in animals. The fluorescent proteins also find use in protease cleavage assays. The proteins can also be used in assays to determine the phospholipid composition in biological membranes and as a fluorescent timer.

Dwg.0/4

ACCESSION NUMBER: 2003-569236 [53] WPIDS
 DOC. NO. CPI: C2003-153632
 TITLE: Novel nucleic acid encoding a rapidly maturing chromo- or fluorescent mutant of a Cnidarian chromo- or fluorescent protein or its mutant, useful for applications involving chromo- or fluorescent proteins.
 DERWENT CLASS: B04 D16
 INVENTOR(S): BEVIS, B; GLICK, B
 PATENT ASSIGNEE(S): (UYCH-N) UNIV CHICAGO
 COUNTRY COUNT: 102
 PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003054158	A2	20030703	(200353)*	EN	65
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SI SK SL SZ TR TZ UG ZM ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW					
AU 2002357322	A1	20030709	(200428)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003054158	A2	WO 2002-US40539	20021218
AU 2002357322	A1	AU 2002-357322	20021218

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2002357322	A1 Based on	WO 2003054158

PRIORITY APPLN. INFO: US 2001-341723P 20011219

L1 ANSWER 3 OF 414 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
 TI Novel method for identifying a DNA sequence encoding fluorescent proteins from **non-bioluminescent** Anthozoa which are useful for fluorescent labeling and as markers.
 AN 2000-423451 [36] WPIDS
 CR 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36]; 2000-423376 [36]; 2000-423377 [36]; 2000-423378 [36]; 2000-423379 [36]; 2000-423380 [36]; 2000-423381 [36]; 2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]
 AB WO 200034526 A UPAB: 20030117

NOVELTY - Identifying a DNA sequence (I) encoding a fluorescent protein (FP) comprises screening for a nucleic acid (NA) sequence in a sample, the NA encoding a specified peptide wherein the existence of the NA sequence identifies (I).

DETAILED DESCRIPTION - (I) encodes a protein with the sequence GXVNGH, GEGEG, GEGNG, GMNFP, GVNFP or GPVM. INDEPENDENT CLAIMS are also included for the following:

(1) identifying a DNA sequence (I) encoding a FP, comprising screening for an existence of a NA sequence in a sample, wherein the NA sequence hybridizes to a primer selected from GAYGGCTGCGTNAAAYGGDCA, GTTACAGGTGARGGMGARGG, GTTACAGGTGARGGKGARGG, GTTACAGGTGARGGMAAYGG, GTTACAGGTGARGGKAAYGG, TTCCAYGGTTRTGAAAYTTYCC, CCTGCCRAYGGTCCNGTMATG, and CCTGCCRAYGGTCCNGTKATG, wherein the existence of the NA sequence identifies (I);

(2) analyzing a FP in a cell, comprising;

(a) expressing a NA sequence encoding a FP in a cell, the protein having a fully defined 229, 266, 230, 230, 232, 225, 232, 231 or 235 amino acid sequence (given in the specification); and

(b) measuring a fluorescence signal from the protein; and

(3) an isolated and purified fluorescent protein selected from amFP486, cFP484, zFP506, zFP538, dsFP483, drFP583, asFP600, dgFP512, and dmFP592.

USE - The methods are used to isolate DNA sequence encoding fluorescent proteins from **non-bioluminescent** Anthozoa organisms. The polynucleotides thus identified can be used to produce the fluorescent proteins recombinantly, and as a source of primers and probe for identifying related proteins. The fluorescent proteins of the invention have applications in fluorescent labeling, as fluorescent markers for gene expression and protein localization studies, and in fluorescence resonance energy transfer (FRET) reactions.

ADVANTAGE - None given.

DESCRIPTION OF DRAWING(S) - The figure shows the excitation and emission spectrum of novel fluorescent protein drFP583, from **Discosoma** sp. red.

Dwg.8/11

ACCESSION NUMBER: 2000-423451 [36] WPIDS
CROSS REFERENCE: 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36];
2000-423376 [36]; 2000-423377 [36]; 2000-423378 [36];
2000-423379 [36]; 2000-423380 [36]; 2000-423381 [36];
2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]
DOC. NO. CPI: C2000-128270
TITLE: Novel method for identifying a DNA sequence encoding
fluorescent proteins from **non-**
bioluminescent Anthozoa which are useful for
fluorescent labeling and as markers.
DERWENT CLASS: B04 D16
INVENTOR(S): FRADKOV, A F; LABAS, Y A; LUKYANOY, S A; MATZ, M V
PATENT ASSIGNEE(S): (CLON-N) CLONTECH LAB INC
COUNTRY COUNT: 20
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000034526	A1	20000615	(200036)*	EN	71
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: JP					
EP 1135532	A1	20010926	(200157)	EN	
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
JP 2002531146	W	20020924	(200278)		68

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
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WO 2000034526	A1	WO 1999-US29405	19991210
EP 1135532	A1	EP 1999-966135	19991210
		WO 1999-US29405	19991210
JP 2002531146	W	WO 1999-US29405	19991210
		JP 2000-586958	19991210

FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 1135532	A1 Based on	WO 2000034526
JP 2002531146	W Based on	WO 2000034526

PRIORITY APPLN. INFO: US 1998-210330 19981211

L1 ANSWER 4 OF 414 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN

TI Novel fluorescent protein from **non-bioluminescent**
Discosoma sp. red, useful for fluorescent labeling and as markers.

AN 2000-423381 [36] WPIDS

CR 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36]; 2000-423376 [36];
2000-423377 [36]; 2000-423378 [36]; 2000-423379 [36]; 2000-423380 [36];
2000-423451 [36]; 2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]

AB WO 200034326 A UPAB: 20031009
NOVELTY - An isolated cDNA (I) or its variants from a **non-bioluminescent Discosoma** sp. and the red fluorescent protein drFP583 (II) encoded by it, are new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) an isolated DNA sequence (III) or its variants, having a fully defined 678, 898, 678 695 or 678 bp sequence (given in the specification), encoding a FP (IV);
(2) a vector capable of expressing (I) or (III) in a recombinant cell;
(3) a host cell transfected with the vector of (2), which is capable of expressing the FP;
(4) an isolated protein (II) encoded by (I);
(5) an isolated protein (IV) having one of four fully defined 225 amino acid sequences (given in the specification) encoded by (III); and
(6) an amino acid sequence which can be used as a basis for designing an oligonucleotide probe for identification of a DNA encoding a FP.
USE - The polynucleotides of the invention can be used to produce the proteins recombinantly, and as a source of primers and probe for identifying related proteins. The fluorescent proteins of the invention have applications in fluorescent labeling, as fluorescent markers for gene expression and protein localization studies, and in fluorescence resonance energy transfer (FRET) reactions.
ADVANTAGE - The invention provides novel fluorescent proteins, which may have improved properties and better suitability for larger excitations, compared to prior art fluorescent proteins such as green fluorescent proteins.
DESCRIPTION OF DRAWING(S) - The figure shows the excitation and emission spectrum of novel fluorescent protein drFP583, from **Discosoma** sp. red.

Dwg.2/4

ACCESSION NUMBER: 2000-423381 [36] WPIDS

CROSS REFERENCE: 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36];
2000-423376 [36]; 2000-423377 [36]; 2000-423378 [36];
2000-423379 [36]; 2000-423380 [36]; 2000-423451 [36];
2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]

DOC. NO. CPI: C2000-128200

TITLE: Novel fluorescent protein from **non-bioluminescent Discosoma** sp. red,
useful for fluorescent labeling and as markers.

DERWENT CLASS: B04 D16

INVENTOR(S): CHEN, Y; DING, L; FRADKOV, A F; GREEN, G; LABAS, Y A;
LUKYANOY, S A; MATZ, M V
PATENT ASSIGNEE(S): (CLON-N) CLONTECH LAB INC
COUNTRY COUNT: 20
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000034326	A1	20000615	(200036)*	EN	86
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: JP US					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000034326	A1	WO 1999-US29473	19991210

PRIORITY APPLN. INFO: US 1999-418529 19991014; US
1998-210330 19981211

L1 ANSWER 5 OF 414 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
TI Novel fluorescent protein from **non-bioluminescent**
Discosoma species, useful for fluorescent labeling and as markers.
AN 2000-423379 [36] WPIDS
CR 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36]; 2000-423376 [36];
2000-423377 [36]; 2000-423378 [36]; 2000-423380 [36]; 2000-423381 [36];
2000-423451 [36]; 2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]
AB WO 200034324 A UPAB: 20030117
NOVELTY - Novel DNA sequence (I) encoding a fluorescent protein (FP; II),
comprising a sequence from a **non-bioluminescent**
Anthozoa, its hybrid and/or variant sequences, are new.
DETAILED DESCRIPTION - Novel DNA sequence (I) encoding a fluorescent
protein (FP; II) comprising:
(a) a sequence a sequence from a **non-bioluminescent**
Anthozoa;
(b) a sequence which hybridizes to the sequence of (a); and
(c) a sequence differing from the DNAs of (a) and (b) due to
degeneracy of the genetic code.
INDEPENDENT CLAIMS are also included for the following:
(1) a DNA sequence (III) encoding a FP (IV) selected from:
(a) a sequence of 876 base pairs (bp), given in the specification;
(b) a sequence which hybridizes to the DNA of (a); and
(c) a sequence diiffering from the DNAs of (1a) and (1b) due to
degeneracy of the genetic code.
(2) a vector capable of expressing (I) or (III) in a recombinant
cell, comprising DNA and regulatory elements necessary for expression of
the DNA in the cell;
(3) a host cell transfected with the vector of (2), which is capable
of expressing the FP;
(4) an isolated protein encoded by (I);
(5) an isolated protein encoded by (III) (especially dmFP592); and
(6) an amino acid sequence which can be used as a basis for designing
an oligonucleotide probe for identification of a DNA encoding a FP by
hybridization, comprising 1 of 6 (aa1-aa6) sequence of 4-6 aa, given in
the specification.
GXVNGH (aa1);
GEGEG (aa2);
GEGNG (aa3);
GMNFP (aa4);
GVNFP (aa5); and
GPVM (aa6).
USE - The polynucleotides of the invention can be used to produce

fluorescent proteins recombinantly, and as a source of primers and probes for identifying related proteins. The fluorescent proteins of the invention have applications in fluorescent labeling, as fluorescent markers for gene expression and protein localization studies, and in fluorescence resonance energy transfer (FRET) reactions.

ADVANTAGE - The novel fluorescent proteins may have improved properties and better suitability for larger excitations, compared to prior art fluorescent proteins such as green fluorescent proteins.

Dwg.0/2

ACCESSION NUMBER: 2000-423379 [36] WPIDS
CROSS REFERENCE: 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36];
2000-423376 [36]; 2000-423377 [36]; 2000-423378 [36];
2000-423380 [36]; 2000-423381 [36]; 2000-423451 [36];
2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]
DOC. NO. CPI: C2000-128198
TITLE: Novel fluorescent protein from **non-bioluminescent Discosoma** species,
useful for fluorescent labeling and as markers.
DERWENT CLASS: B04 D16
INVENTOR(S): FRADKOV, A F; LABAS, Y A; LUKYANOY, S A; MATZ, M V
PATENT ASSIGNEE(S): (CLON-N) CLONTECH LAB INC
COUNTRY COUNT: 19
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000034324	A1	20000615	(200036)*	EN	60
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: JP					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000034324	A1	WO 1999-US29412	19991210

PRIORITY APPLN. INFO: US 1999-444341 19991119; US
1998-210330 19981211

L1 ANSWER 6 OF 414 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN

TI Novel fluorescent protein from **non-bioluminescent Discosoma** species, useful for fluorescent labeling and as markers.

AN 2000-423378 [36] WPIDS

CR 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36]; 2000-423376 [36];
2000-423377 [36]; 2000-423379 [36]; 2000-423380 [36]; 2000-423381 [36];
2000-423451 [36]; 2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]

AB WO 200034323 A UPAB: 20030117

NOVELTY - Novel DNA sequence (I) encoding a fluorescent protein (FP; II) from a **non-bioluminescent** Anthozoa, its hybrid and/or variant sequences, are new.

DETAILED DESCRIPTION - Novel DNA sequence (I) encoding a fluorescent protein (II) comprising:

(a) a sequence encoding a fluorescent protein (FP) which is from a **non-bioluminescent** Anthozoa;

(b) a sequence which hybridizes to the sequence of (a); and

(c) a sequence that differs from the DNAs of (a) and (b) due to degeneracy of the genetic code.

INDEPENDENT CLAIMS are also included for the following:

(1) a DNA sequence (III) encoding a FP (IV) comprising:

(a) a sequence of 919 base pairs (bp), given in the specification;

(b) a sequence which hybridizes to the DNA of (a); and

(c) a sequence differing from the DNAs of (a) and (b) due to degeneracy of the genetic code;

(2) a vector capable of expressing (I) or (III) in a recombinant cell, comprising DNA and regulatory elements necessary for expression of the DNA in the cell;

(3) a host cell transfected with the vector of (2), which is capable of expressing the FP;

(4) an isolated protein encoded by (I);

(5) an isolated protein encoded by (III) (especially dgFP512); and

(6) an amino acid (aa) sequence which can be used as a basis for designing an oligonucleotide probe for the identification of a DNA encoding a FP by means of hybridization, comprising 1 of 6 (aa1-aa6) sequences of 4-6 aa.

GXVNGH (aa1);

GEGEG (aa2);

GEGNG (aa3);

GMNFP (aa4);

GVNFP (aa5); and

GPVM (aa6).

X = an unknown amino acid.

USE - The polynucleotides of the invention can be used to produce fluorescent proteins recombinantly, and as a source of primers and probes for identifying related proteins. The fluorescent proteins of the invention have applications in fluorescent labeling, as fluorescent markers for gene expression and protein localization studies, and in fluorescence resonance energy transfer (FRET) reactions.

ADVANTAGE - The novel fluorescent proteins may have improved properties and better suitability for larger excitations compared to prior art fluorescent proteins such as green fluorescent proteins.

Dwg.0/2

ACCESSION NUMBER: 2000-423378 [36] WPIDS
CROSS REFERENCE: 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36];
2000-423376 [36]; 2000-423377 [36]; 2000-423379 [36];
2000-423380 [36]; 2000-423381 [36]; 2000-423451 [36];
2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]
DOC. NO. CPI: C2000-128197
TITLE: Novel fluorescent protein from **non-bioluminescent Discosoma** species,
useful for fluorescent labeling and as markers.
DERWENT CLASS: B04 D16
INVENTOR(S): FRADKOV, A F; LABAS, Y A; LUKYANOV, S A; MATZ, M V
PATENT ASSIGNEE(S): (CLON-N) CLONTECH LAB INC
COUNTRY COUNT: 19
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000034323	A1	20000615	(200036)*	EN	58
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: JP					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000034323	A1	WO 1999-US29404	19991210

PRIORITY APPLN. INFO: US 1999-444338 19991119; US
1998-210330 19981211

L1 ANSWER 7 OF 414 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
TI Novel fluorescent protein from **non-bioluminescent**
Discosoma striata, useful for fluorescent labeling and as markers.
AN 2000-423377 [36] WPIDS
CR 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36]; 2000-423376 [36];

2000-423378 [36]; 2000-423379 [36]; 2000-423380 [36]; 2000-423381 [36];
2000-423451 [36]; 2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]
AB WO 200034322 A UPAB: 20030117

NOVELTY - A cDNA sequence (I) or its variants, isolated from a **non**
- **bioluminescent Discosoma striata** and the fluorescent
protein cFP484 (II) it encodes, are new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the
following:

- (1) a DNA molecule (III) having a fully defined 960 bp sequence
(given in the specification) encoding a FP (IV);
- (2) a vector capable of expressing (I) or (III) in a recombinant
cell, comprising DNA and regulatory elements necessary for expression of
the DNA in the cell;
- (3) a host cell transfected with the vector of (2), which is capable
of expressing the FP;
- (4) an isolated protein (II) encoded by (I);
- (5) an isolated protein (IV) with a fully defined 232 amino acid
sequence (given in the specification) encoded by (III); and
- (6) an amino acid sequence which can be used as a basis for designing
an oligonucleotide probe for identification of a DNA encoding a FP.

USE - The polynucleotides of the invention can be used to produce the
proteins recombinantly, and as a source of primers and probes for
identifying related proteins. The fluorescent proteins of the invention
have applications in fluorescent labeling, as fluorescent markers for gene
expression and protein localization studies, and in fluorescence resonance
energy transfer (FRET) reactions.

ADVANTAGE - The invention provides novel fluorescent proteins, which
may have improved properties and better suitability for larger
excitations, compared to prior art fluorescent proteins such as green
fluorescent proteins.

DESCRIPTION OF DRAWING(S) - The figure shows the excitation and
emission spectrum of novel fluorescent protein dsFP483, from
Discosoma striata.

Dwg.2/2

ACCESSION NUMBER: 2000-423377 [36] WPIDS
CROSS REFERENCE: 2000-423373 [36]; 2000-423374 [36]; 2000-423375 [36];
2000-423376 [36]; 2000-423378 [36]; 2000-423379 [36];
2000-423380 [36]; 2000-423381 [36]; 2000-423451 [36];
2001-266409 [27]; 2002-154595 [20]; 2002-691654 [74]
DOC. NO. CPI: C2000-128196
TITLE: Novel fluorescent protein from **non-**
bioluminescent Discosoma striata,
useful for fluorescent labeling and as markers.
DERWENT CLASS: B04 D16
INVENTOR(S): FRADKOV, A F; LABAS, Y A; LUKYANOY, S A; MATZ, M V
PATENT ASSIGNEE(S): (CLON-N) CLONTECH LAB INC
COUNTRY COUNT: 19
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000034322	A1	20000615	(200036)*	EN	56
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: JP					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000034322	A1	WO 1999-US29403	19991210

PRIORITY APPLN. INFO: US 1999-418922 19991015; US
1998-210330 19981211

L1 ANSWER 8 OF 414 DGENE COPYRIGHT 2004 THOMSON DERWENT on STN
TI Novel nucleic acid encoding interconverted mutant of chromo-or
fluorescent protein which are useful as biosensors, coloring agents.
AN ADH34504 protein DGENE
AB The invention relates to interconverted mutants of chromoproteins (CP) or
fluorescent proteins (FP) and nucleic acids encoding them. The mutant is
derived from a Cnidarian species, preferably a **non-bioluminescent** Cnidarian species, and most preferably an
Anthozoan species. The invention is based on the finding that although
green fluorescent protein (GFP)-like chromoproteins and fluorescent
proteins exhibit some degree of homology, there are certain positions
(referred to as 148, 165, 167 and 203; numbering corresponds to GFP)
that are occupied by noticeably different residues in the two types of
proteins. Mutagenesis of the residues in these key positions in, for
example, a fluorescent protein, to those found in a chromoprotein is
therefore proposed to confer chromoprotein activity on the fluorescent
protein mutant, with chromoproteins being able to be converted into
fluorescent proteins in a similar manner. The invention also relates to
expression constructs, vectors, host cells and host cell progeny
comprising a nucleic acid of the invention; the recombinant production
of an interconverted chromoprotein or fluorescent protein mutant; and
antibodies specific for interconverted mutant proteins of the invention.
The interconverted mutants are useful in any application that employs a
chromoprotein or fluorescent protein. Fluorescent protein mutants having
chromoprotein activity can be useful as colouring agents in, for example,
food compositions, pharmaceuticals, cosmetics and living organisms.
Proteins with chromoprotein activity are also useful as labels in
biological analyte detection assays, as selectable markers in
recombinant DNA applications (e.g. the production of transgenic cells
and organisms), and are also useful as sunscreens and selective filters.
Chromoprotein mutants having fluorescent protein activity useful in
fluorescence resonance energy transfer (FRET) applications, as
biosensors in prokaryotic and eukaryotic cells, as markers of whole
cells to detect changes in multicellular reorganisation and migration,
as second messenger detectors, as in vivo markers in animals (e.g.,
transgenic animals), in fluorescence activated cell sorting
applications, in protease cleavage assays, and in assays to determine
the phospholipid composition in biological membranes. Proteins with
fluorescent protein activity can also be used as fluorescent timers,
where the switch of one fluorescent colour to another (e.g., green to
red) is concomitant with the ageing of the protein and is useful for
determination of the activation or deactivation of gene expression. The
present sequence represents a **Discosoma** sp. red fluorescent
protein DsRed mutant generated in an example of the invention. The
present sequence is not shown in the specification, but was derived from
the wild-type DsRed sequence (ADH34489) shown in Fig 1 and the
information provided on page 42.

ACCESSION NUMBER: ADH34504 protein DGENE
TITLE: Novel nucleic acid encoding interconverted mutant of
chromo-or fluorescent protein which are useful as
biosensors, coloring agents.
INVENTOR: Bulina M E; Chudakov D; Lukyanov K A
PATENT ASSIGNEE: (CLON-N)CLONTECH LAB INC.
PATENT INFO: WO 2003057833 A2 20030717 56p
APPLICATION INFO: WO 2002-US41418 20021223
PRIORITY INFO: US 2001-343128P 20011226
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2003-607998 [57]
DESCRIPTION: **Discosoma** sp. DsRed mutant S148A/I165S/K167M/S203A.

L1 ANSWER 9 OF 414 DGENE COPYRIGHT 2004 THOMSON DERWENT on STN
TI Novel nucleic acid encoding interconverted mutant of chromo-or

fluorescent protein which are useful as biosensors, coloring agents.

AN ADH34501 protein DGENE

AB The invention relates to interconverted mutants of chromoproteins (CP) or fluorescent proteins (FP) and nucleic acids encoding them. The mutant is derived from a Cnidarian species, preferably a **non-bioluminescent** Cnidarian species, and most preferably an Anthozoan species. The invention is based on the finding that although green fluorescent protein (GFP)-like chromoproteins and fluorescent proteins exhibit some degree of homology, there are certain positions (referred to as 148, 165, 167 and 203; numbering corresponds to GFP) that are occupied by noticeably different residues in the two types of proteins. Mutagenesis of the residues in these key positions in, for example, a fluorescent protein, to those found in a chromoprotein is therefore proposed to confer chromoprotein activity on the fluorescent protein mutant, with chromoproteins being able to be converted into fluorescent proteins in a similar manner. The invention also relates to expression constructs, vectors, host cells and host cell progeny comprising a nucleic acid of the invention; the recombinant production of an interconverted chromoprotein or fluorescent protein mutant; and antibodies specific for interconverted mutant proteins of the invention. The interconverted mutants are useful in any application that employs a chromoprotein or fluorescent protein. Fluorescent protein mutants having chromoprotein activity can be useful as colouring agents in, for example, food compositions, pharmaceuticals, cosmetics and living organisms. Proteins with chromoprotein activity are also useful as labels in biological analyte detection assays, as selectable markers in recombinant DNA applications (e.g. the production of transgenic cells and organisms), and are also useful as sunscreens and selective filters. Chromoprotein mutants having fluorescent protein activity useful in fluorescence resonance energy transfer (FRET) applications, as biosensors in prokaryotic and eukaryotic cells, as markers of whole cells to detect changes in multicellular reorganisation and migration, as second messenger detectors, as in vivo markers in animals (e.g., transgenic animals), in fluorescence activated cell sorting applications, in protease cleavage assays, and in assays to determine the phospholipid composition in biological membranes. Proteins with fluorescent protein activity can also be used as fluorescent timers, where the switch of one fluorescent colour to another (e.g., green to red) is concomitant with the ageing of the protein and is useful for determination of the activation or deactivation of gene expression. The present sequence represents a *Discosoma* sp. red fluorescent protein DsRed mutant generated in an example of the invention. The present sequence is not shown in the specification, but was derived from the wild-type DsRed sequence (ADH34489) shown in Fig 1 and the information provided on page 42.

ACCESSION NUMBER: ADH34501 protein DGENE

TITLE: Novel nucleic acid encoding interconverted mutant of chromo-or fluorescent protein which are useful as biosensors, coloring agents.

INVENTOR: Bulina M E; Chudakov D; Lukyanov K A

PATENT ASSIGNEE: (CLON-N) CLONTECH LAB INC.

PATENT INFO: WO 2003057833 A2 20030717 56p

APPLICATION INFO: WO 2002-US41418 20021223

PRIORITY INFO: US 2001-343128P 20011226

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2003-607998 [57]

DESCRIPTION: *Discosoma* sp. DsRed mutant S148A/K167M.

L1 ANSWER 10 OF 414 DGENE COPYRIGHT 2004 THOMSON DERWENT on STN

TI Novel nucleic acid encoding interconverted mutant of chromo-or fluorescent protein which are useful as biosensors, coloring agents.

AN ADH34502 protein DGENE

AB The invention relates to interconverted mutants of chromoproteins (CP) or

fluorescent proteins (FP) and nucleic acids encoding them. The mutant is derived from a Cnidarian species, preferably a **non-bioluminescent** Cnidarian species, and most preferably an Anthozoan species. The invention is based on the finding that although green fluorescent protein (GFP)-like chromoproteins and fluorescent proteins exhibit some degree of homology, there are certain positions (referred to as 148, 165, 167 and 203; numbering corresponds to GFP) that are occupied by noticeably different residues in the two types of proteins. Mutagenesis of the residues in these key positions in, for example, a fluorescent protein, to those found in a chromoprotein is therefore proposed to confer chromoprotein activity on the fluorescent protein mutant, with chromoproteins being able to be converted into fluorescent proteins in a similar manner. The invention also relates to expression constructs, vectors, host cells and host cell progeny comprising a nucleic acid of the invention; the recombinant production of an interconverted chromoprotein or fluorescent protein mutant; and antibodies specific for interconverted mutant proteins of the invention. The interconverted mutants are useful in any application that employs a chromoprotein or fluorescent protein. Fluorescent protein mutants having chromoprotein activity can be useful as colouring agents in, for example, food compositions, pharmaceuticals, cosmetics and living organisms. Proteins with chromoprotein activity are also useful as labels in biological analyte detection assays, as selectable markers in recombinant DNA applications (e.g. the production of transgenic cells and organisms), and are also useful as sunscreens and selective filters. Chromoprotein mutants having fluorescent protein activity useful in fluorescence resonance energy transfer (FRET) applications, as biosensors in prokaryotic and eukaryotic cells, as markers of whole cells to detect changes in multicellular reorganisation and migration, as second messenger detectors, as in vivo markers in animals (e.g., transgenic animals), in fluorescence activated cell sorting applications, in protease cleavage assays, and in assays to determine the phospholipid composition in biological membranes. Proteins with fluorescent protein activity can also be used as fluorescent timers, where the switch of one fluorescent colour to another (e.g., green to red) is concomitant with the ageing of the protein and is useful for determination of the activation or deactivation of gene expression. The present sequence represents a **Discosoma** sp. red fluorescent protein DsRed mutant generated in an example of the invention. The present sequence is not shown in the specification, but was derived from the wild-type DsRed sequence (ADH34489) shown in Fig 1 and the information provided on page 42.

ACCESSION NUMBER:	ADH34502	protein	DGENE
TITLE:	Novel nucleic acid encoding interconverted mutant of chromo- or fluorescent protein which are useful as biosensors, coloring agents.		
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DESCRIPTION:	Discosoma sp. DsRed mutant S148A/K167M/S203A.		